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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/518,212

Applicant(s)

CHRISTENSEN ET AL.

Examiner

JASON E. MATTIS

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

1. This Office Action is in response to the Amendment filed 5/13/08. New claims 15-18 have been added. Claims 1-18 are currently pending in the application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lydon et al. (U.S. Pat. 6680939 B1) in view of Haq et al. (U.S. Pat. 6885635 B1).

With respect to claim 1, Lydon et al. discloses a linearly expandable router (See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a 1024x1024 routing switch, which is a linearly expandable router).

Lydon et al. also discloses a first router component including a first routing engine having input and output sides, a second routing component including a third routing engine having input and output sides, and a third routing component including a fifth routing engine having input and output sides **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch**

comprising routers 50, 60, and 70, which correspond to a first, second, and third routing component including a first, third, and fifth routing engine respectively, and for reference to each of the routers 50, 60, and 70 having input and output sides). Lydon et al. further discloses a first link, second link, and third link coupling the input sides of the first, third, and fifth, routing engines together **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to each of router 50, 60, and 70 including expansion terminals that are used to link the inputs of the routers 50, 60, and 70 to each other using three links).** Lydon et al. also discloses the first, third, and fifth routing engines arranged in a fully connected topology **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the connections between routers 50, 60, and 70 allowing data at any input of the routers 50, 60, and 70 to be coupled to any output of the routers 50, 60, and 70 such that these routers are arranged in a fully connected topology).** Lydon et al. does not specifically disclose each router component including an additional routing engine. Lydon et al. also does not disclose the input sides of each of the addition routing engines being coupled together by links such that the additional routing engines are arranged in a fully connected topology.

With respect to claim 2, Lydon et al. discloses the routing engines each having n inputs and m outputs **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to routers 50, 60, and 70 having 256 inputs and 256 outputs with n and m each corresponding to 256).** Lydon et al. also discloses a router formed by the first, third, and fifth routing engines having $3N$ inputs and $3M$

outputs (See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a router formed by using only routers 50, 60, and 70, and excluding router 80, having 256 times 3 inputs and 256 times 3 outputs). Lydon et al. does not disclose the inputs and outputs of the additional routing engines of each routing component being redundant of the inputs and outputs of the other routing engine of each routing component.

With respect to claim 3, Lydon et al. discloses the first, second, and third links providing a first and second N addition inputs to each of the first, third, and fifth routing engines (See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the links between routers 50, 60, and 70 providing a first and second N addition inputs to each of the routers 50, 60, and 70, for example, the link between router 50 and router 60 provides the 256 inputs of router 60 as additional inputs for router 50 while the link between router 50 and router 70 provides the 256 inputs of router 70 as second additional inputs for router 50). Lydon et al. does not disclose links between each additional routing engine of the routing components providing first and second N additional redundant inputs to each of the additional routing engines.

With respect to claim 4, Lydon et al. discloses a fourth router component including a seventh routing engine having input and output sides (See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch also comprising router 80, which corresponds to a fourth routing component including a seventh routing engine, and for reference to router 80

having input and output sides). Lydon et al. also discloses a seventh, eighth, and ninth link coupling the input side of the seventh routing engine to the input sides of the first, third, and fifth routing engine respectively **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to of router 80 including expansion terminals that are used to link the inputs of the router 80 to the inputs of routers 50, 60, and 70).** Lydon et al. also discloses the first, third, fifth, and seventh routing engines arranged in a fully connected topology **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the connections between routers 50, 60, 70, and 80 allowing data at any input of the routers 50, 60, 70, and 80 to be coupled to any output of the routers 50, 60, 70, and 80 such that these routers are arranged in a fully connected topology).** Lydon et al. does not specifically disclose the fourth router component including an addition routing engine. Lydon et al. also does not disclose the input sides of each of the addition routing engines being coupled together by links such that the additional routing engines are arranged in a fully connected topology.

With respect to claim 5, Lydon et al. discloses the routing engines each having n inputs and m outputs **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to routers 50, 60, 70, and 80 having 256 inputs and 256 outputs with n and m each corresponding to 256).** Lydon et al. also discloses a router formed by the first, third, fifth, and seventh routing engines having $4N$ inputs and $4M$ outputs **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a router formed by using routers 50, 60, 70, and 80 having 256**

times 4 inputs and 256 times 4 outputs). Lydon et al. does not disclose the inputs and outputs of the additional routing engines of each routing component being redundant of the inputs and outputs of the other routing engine of each routing component.

With respect to claim 6, Lydon et al. discloses the first, second, third, seventh, eighth, and ninth links providing a first, second, and third N addition inputs to each of the first, third, fifth, and seventh routing engines **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the links between routers 50, 60, 70, and 80 providing a first, second, and third N addition inputs to each of the routers 50, 60, 70, and 80, for example, the link between router 50 and router 60 provides the 256 inputs of router 60 as additional inputs for router 50, while the link between router 50 and router 70 provides the 256 inputs of router 70 as second additional inputs for router 50, while the link between router 50 and router 80 provides the 256 inputs of router 80 as third additional inputs for router 50).** Lydon et al. does not disclose links between each additional routing engine of the routing components providing first, second, and third N additional redundant inputs to each of the additional routing engines.

With respect to claim 16, Lydon et al. discloses that the first, second, and third links are discrete links **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the link connecting router 50 to router 60, the link connecting router 50 to router 70, and the link connecting router 60 to router 70,**

each being separate, discrete links). Lydon et al. does not specifically disclose discrete fourth, fifth, and sixth links.

With respect to claims 17 and 18, Lydon et al. does not specifically disclose the first routing engine being redundant of a second routing engine, the third routing engine being redundant of a fourth routing engine, and the fifth routing engine being redundant of a sixth routing engine.

With respect to claims 1-6 and 16-18, Haq et al., in the field of communications, discloses router components including a first routing engine as well as an additional routing engine providing redundancy for the first routing engine **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to a router including two routing engines and processing components with the second routing engine and processing component being redundant of the first routing engine).** Using router components including a first routing engine as well as an additional routing engine providing redundancy for the first routing engine has the advantage of protecting against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to this advantage).**

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Haq et al., to combine using router components including a first routing engine as well as an additional routing engine providing redundancy for the first routing engine, as suggested by Haq et al., having the

addition routing engines of each routing component being coupled by discrete links in a similar manner as the routers of Lydon et al., with the system and method of Lydon et al., with the motivation being to protect against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails.

With respect to claim 15, Lydon et al. discloses that the first, second, and third links are discrete links **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the link connecting router 50 to router 60, the link connecting router 50 to router 70, and the link connecting router 60 to router 70, each being separate, discrete links).**

With respect to claim 7, Lydon et al. discloses a linearly expandable broadcast router **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a 1024x1024 routing switch, which is a linearly expandable broadcast router)**. Lydon et al. also discloses at least three router components having a router matrix **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch comprising routers 50, 60, and 70, which are router components each including a router matrix)**. Lydon et al. further discloses a means for coupling the first router matrices of the at least three broadcast router components in a first fully connected topology **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the connections between routers 50, 60, and 70 allowing data at any input of the routers 50, 60, and 70 to be coupled to any output of the routers 50, 60, and 70 such that these routers are arranged in a fully connected topology)**. Lydon et al. does not specifically disclose

each router component including an additional redundant router matrix. Lydon et al. also does not disclose a means for coupling the additional router matrices in a second fully connected topology.

With respect to claim 8, each of the first routing matrices comprising a routing engine coupled between input and output sides thereof **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch comprising routers 50, 60, and 70, each including a routing engine respectively, coupled between input and output sides of the routers)**. Lydon et al. does not disclose each of the additional routing matrices comprising a routing engine coupled between input and output sides thereof.

With respect to claim 9, Lydon et al. discloses the routing engines of each of the first routing matrices each having n inputs **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to routers 50, 60, and 70 having 256 inputs with n corresponding to 256)**. Lydon et al. does not disclose the routing engines of each of the additional routing matrices each having n inputs.

With respect to claims 10-12, Lydon et al. does not disclose the n inputs of the routing engines of the additional routing matrices being redundant n inputs of corresponding routing engines of the first routing matrices.

With respect to claims 7-12, Haq et al., in the field of communications, discloses router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et**

al. for reference to a router including two routing engines and processing components with the second routing engine and processing component being redundant of the first routing engine). Using router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix has the advantage of protecting against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to this advantage).**

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Haq et al., to combine using router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix, as suggested by Haq et al., having the addition routing engines of each routing component being coupled by links in a similar manner as the routers of Lydon et al., with the system and method of Lydon et al., with the motivation being to protect against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails.

With respect to claim 13, Lydon et al. discloses a linearly expandable broadcast router **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to a 1024x1024 routing switch, which is a linearly expandable broadcast router).** Lydon et al. also discloses providing first, third, and fifth router matrices each having input and output sides **(See column 4 line 48 to column 5 line 14 and Figure 4**

of Lydon et al. for reference to the 1024x1024 routing switch comprising routers 50, 60, and 70, which are router components each including a router matrix and each having input and output sides). Lydon et al. further discloses a first link, second link, and third link coupling the input sides of the first, third, and fifth, routing matrices together **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to each of router 50, 60, and 70 including expansion terminals that are used to link the inputs of the routers 50, 60, and 70 to each other using three links).** Lydon et al. does not specifically disclose each router component including an additional redundant routing matrix. Lydon et al. also does not disclose the input sides of each of the addition routing matrices being coupled together by links.

With respect to claim 14, Lydon et al. discloses providing a seventh routing matrix having input and output sides **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to the 1024x1024 routing switch also comprising router 80, which is a router component including a seventh routing matrix, and for reference to router 80 having input and output sides).** Lydon et al. also discloses a seventh, eighth, and ninth link coupling the input side of the seventh routing matrix to the input sides of the first, third, and fifth routing matrix respectively **(See column 4 line 48 to column 5 line 14 and Figure 4 of Lydon et al. for reference to of router 80 including expansion terminals that are used to link the inputs of the router 80 to the inputs of routers 50, 60, and 70).** Lydon et al. does not specifically disclose including an addition eighth routing matrix. Lydon et al. also

does not disclose the input sides of each of the addition routing engines being coupled together by links.

With respect to claims 13 and 14, Haq et al., in the field of communications, discloses router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to a router including two routing engines and processing components with the second routing engine and processing component being redundant of the first routing engine)**. Using router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix has the advantage of protecting against failure of a routing engine by providing redundant routing engines as a backups that take over when a routing engine fails **(See column 2 line 35 to column 3 line 65 and Figures 1 and 2 of Haq et al. for reference to this advantage)**.

It would have been obvious for one of ordinary skill in the art at the time of the invention, when presented with the work of Haq et al., to combine using router components including a first routing engine and matrix as well as an additional routing engine and matrix providing redundancy for the first routing engine and matrix, as suggested by Haq et al., having the addition routing engines of each routing component being coupled by links in a similar manner as the routers of Lydon et al., with the system and method of Lydon et al., with the motivation being to protect against failure of a routing engine by

providing redundant routing engines as a backups that take over when a routing engine fails.

Response to Arguments

4. Applicant's arguments filed 5/13/08 have been fully considered but they are not persuasive.

Regarding Applicant's argument that the combination of Lydon et al. and Haq et al. does not render obvious the claim limitations regarding second, fourth, and sixth redundant routing engines, connected by fourth, fifth, and sixth links, as claimed, the Examiner respectfully disagrees. As shown in the rejections above, Lydon et al. discloses an expandable router made up of multiple routing engines each connected to one another through discrete links (See Figure 4 of Lydon et al. for reference to a routing switch made up of multiple routers 50, 60, 70, and 80, with corresponding inputs of the routers being connected to one another using discrete links). Haq et al. discloses a router having two routing engines with one routing engine serving as an active routing engine and the other routing engine serving as a redundant routing engine (See the abstract and Figure 2 of Haq et al. for reference to a router including two redundant routing engines). Thus, the rejections above are based on a combination of Lydon et al.'s system and method including multiple routing engines connected to one another to form an expanded router with Haq et al.'s teaching of providing redundant routing engines to serve as a backup in case of a failure of a routing engine. It would have

been obvious to combine redundant routing engines, as suggested by Haq et al., in the system and method of Lydon et al. in order to provide the advantage of backup in the case of a failure of a routing engine. Applicant further argues that although Haq et al. does disclose providing redundant backup routing engines, Haq et al. does not disclose links connecting redundant routing engines as claimed. While this is true, it is also noted that Haq et al. does not discuss how its redundant routing modules are connected to other routers within a routing network. Thus, since Lydon et al. already discloses a manner in which routing engines are connected to one another to form an expanded router, and since Haq et al. does not disclose any specific manner in which to connect routing engines of one router to the routing engines of another router, it would have been obvious to connect redundant routing engines to one another in a similar manner as the routing engines of Lydon et al. Therefore, it would have been obvious to provide fourth, fifth, and sixth links connecting redundant routing engines, as claimed.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON E. MATTIS whose telephone number is (571)272-3154. The examiner can normally be reached on M-F 8AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on (571)272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JEM

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